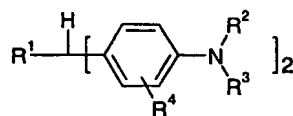


Claims

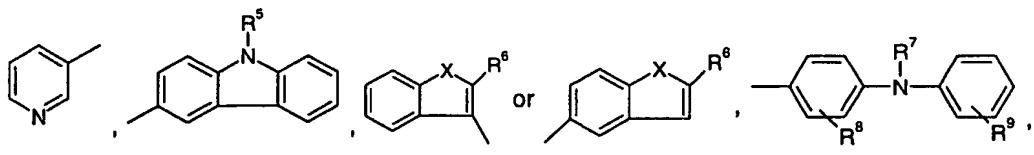
1. A process for preparing a dry film resist by forming a photocurable resin composition onto a support film with a thickness of 1 to 50 μm and optionally laminate a protective film onto the photocurable composition layer to obtain a dry film resist; whereby the photocurable resin is formed from a homogeneous mixture comprising

- (a) from 20-90wt% of an alkaline soluble binder oligomer or polymer;
- (b) from 5 to 60wt% of one or more photopolymerizable monomers which are compatible with the oligomers and polymers of component (a);
- (c) from 0.01 to 20% by weight of one or more photoinitiators;
- (d) from 0 to 20% by weight of additives and/or assistants; and
- (e) from 0.1 to 10 % by weight of a leuco triphenylmethane dye of the formula I



wherein

R^1 is a residue selected from



R^2 is C_1 - C_{12} alkyl or phenyl which may be mono-, di- or tri-substituted by C_1 - C_6 alkyl, trifluoromethyl, C_1 - C_6 alkoxy, C_1 - C_6 alkylthio, halogen and nitro;

R^3 is hydrogen or C_1 - C_{12} alkyl;

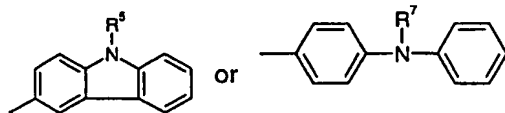
R^4 to R^9 independently of one another are hydrogen or C_1 - C_{12} alkyl;

X is O, S, NH or N- C_1 - C_{12} -alkyl;

(a) to (e) being 100% by weight.

2. A process according to claim 1, wherein in formula I

R^1 is a residue selected from



R^2 is unsubstituted phenyl,

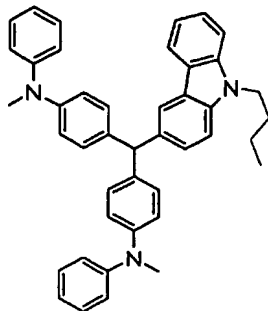
R^3 is C_1 - C_4 alkyl

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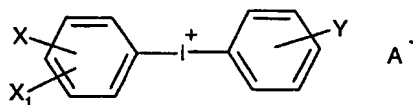
R⁴ is hydrogen;

R⁵ and R⁷ are C₁-C₄alkyl.

3. A process according to claim 1, wherein the leuco triphenylmethan dye is 4,4'-[(9-Butyl-9H-carbazol-3-yl)methylene]bis[N-methyl-N-phenylaniline of the formula



4. A process according to any one of claims 1-3, wherein component d) includes a diaryl-iodonium of formula



wherein

X is branched C₃-C₂₀alkyl or C₃-C₈cycloalkyl;

X₁ is hydrogen, linear C₁-C₂₀alkyl, branched C₃-C₂₀alkyl or C₃-C₈cycloalkyl; with the proviso that the sum of the carbon atoms in X and X₁ is at least 4;

Y is linear C₁-C₁₀alkyl, branched C₃-C₁₀alkyl or C₃-C₈cycloalkyl;

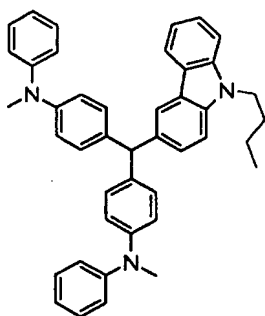
A⁻ is a non-nucleophilic anion, selected from the group (BF₄)⁻, (SbF₆)⁻, (PF₆)⁻, (B(C₆F₅))₄⁻, C₁-C₂₀alkylsulfonate, C₂-C₂₀haloalkylsulfonate, unsubstituted C₆-C₁₀arylsulfonate, camphor-sulfonate, C₁-C₂₀-perfluoroalkylsulfonylmethide, C₁-C₂₀-perfluoroalkylsulfonylimide, and C₆-C₁₀arylsulfonate substituted by halogen, NO₂, C₁-C₁₂alkyl, C₁-C₁₂halo-alkyl, C₁-C₁₂alkoxy or by COOR₁; and

R₁ is C₁-C₂₀alkyl, phenyl, benzyl; or phenyl mono- or poly-substituted by C₁-C₁₂alkyl, C₁-C₁₂alkoxy or by halogen.

5. A dry film resist obtainable by a process according to any one of claims 1-4.

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6. A process for preparing a dry film resist element comprising the steps of
- (A) forming a photocurable resin composition layer made of ingredients(a)-(e) as defined above onto a support film with a thickness of 1 to 50 μm , and laminate a protective film onto the photocurable composition layer to obtain a dry film resist;
 - (B) removing the protective film before use, and thermally laminate the photocurable composition layer onto the surface of a desired substrate for the application of the dry film resist at 100-150°C;
 - (C) exposure to radiation through a mask or by direct laser irradiation;
 - (D) removing the support film and wash away the unexposed (uncured) area by development.
7. A dry film resist element obtainable by a process according to claim 6.
8. The use of a photocurable resin composition (a) to (e) according to claim 1 to avoid unfavourable colour generation during the heat lamination of the photocurable composition layer onto the surface of a desired substrate for the application of the dry film resist at 100-150°C.
9. The use of 4,4'-[(9-butyl-9H-carbazol-3-yl)methylene]bis[N-methyl-N-phenylaniline] of the formula



to form a photocurable resin composition as defined in claim 1 to avoid unfavourable colour generation during the heat lamination of the photocurable composition layer onto the surface of a desired substrate for the application of the dry film resist at 100-150°C.

10. The use of the dry film resist element according to claim 7 for forming copper circuit pattern of printed circuit board and LSI packaging like etching resist and plating resist, for solder resist and for forming cell or electrode pattern in various flat display panel applications.